

THE WARBLER

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Dear Scientist, Creator, Thinker,

You might be surprised to read that the theme of this week's newsletter is **swamps**, and you might wonder what could possibly be interesting about them. Swamps are home to some of nature's most interesting phenomena such as carnivorous (meat-eating) plants and animals like highly venomous snakes and alligators. The carnivorous plants can be brightly colored and emit aromas that attract prey and be alluring for even humans. They are shaped nothing like any other plant that we hold in our gardens, but that's what makes them more fascinating. Venomous snakes can obviously be deadly to humans, but from a distance, their behavior is mysterious, and the ways in which they navigate the world around them can be oddly soothing to observe. Animals such as the platypus, the only mammal known to lay eggs, also reside in swamps, alongside herons, birds with unusually long legs that eat fish. Ecologically, swamps are extremely valuable to civilization, and they hold an incredible amount of biodiversity. They protect our fragile coastlines by absorbing enormous amounts of water and moderating the effects of flooding. In our society, we often see swamps as disgusting and dangerous places, but they really highlight unconventional natural beauty in ways that are drastically different from the tame landscapes that we idealize.

Swamps contain water that is unmoving, providing an environment for life to thrive uniquely. They even act as natural water purifiers, which is explained in an article within this issue of *The Warbler*. Because of this, they could even allow human life to reside within them in premodern conditions. We often think of swamps as dangerous places, but in all reality, they are relatively safe despite the massive potentially deadly creatures that live in them. People even choose to hunt for alligators to eat them, which are notoriously strong. Swamps are only looked upon poorly because of the unconventionality of their natural beauty. Biologists appreciate them because of their stability, which allows swamps to offer an ideal setting for study. We hope you enjoy this week's edition of *The Warbler*, and we hope it enlightens you on a beautiful environment that is often left undiscussed.

Taylor and the APAEP team

"To love a swamp, however, is to love what is muted and marginal, what exists in the shadows, what shoulders its way out of mud and scurries along the damp edges of what is most commonly praised."

BARBARA HURD // American author and professor

WORDS INSIDE

FROM "HERE'S HOW PLANTS BECAME ..."

carnivorous | feeding on other animals

commandeer | officially take possession or control of something, especially for military purposes

FROM "HOW DO WETLANDS ..."

boggy | too wet and muddy to be easily walked on; marshy

aquatic | growing or living in or near water

excessive | more than is necessary, normal, or desirable; immoderate

FROM "JUSTICE FOR ..."

cryptid | an animal (such as Sasquatch or the Loch Ness Monster) that has been claimed to exist but never proven to exist

derogatory | showing a critical or disrespectful attitude

...



GEOPHYSICS

How Do Wetlands Purify Water?

BY LINDSEY TAYLOR | Sciencing.com | November 22, 2019

Pictures of wetlands sometimes depict boggy, grassy areas lacking life and diversity. The truth is that wetlands are full of diverse life and play an important role in our ecosystems. They offer habitat for plants, insects, migrating birds, large mammals such as moose, smaller mammals such as beavers or minks, reptiles, and amphibians. Depending on where you are from, you may have heard of wetlands called bogs, marshes, swamps, or fens.

Value of Wetlands

Why should we protect wetlands? Wetlands with high biodiversity help purify water and provide habitat for fish, reptiles, birds, and small aquatic invertebrates. They also act as a buffer for excess rain in our environment. When an area gets a lot of rain, the wetlands soak up excess water like a sponge.

When it's dry, wetlands slowly release the water that was stored. Wetlands help slow the process of erosion by trapping sediments.

Wetlands as Water Treatment

As sediment, excess nutrients, and chemicals flow off of the land, wetlands filter the run off before it reaches open water. Nutrients are stored and absorbed by plants or microorganisms. Sediment settles at the bottom after reaching an area with slow water flow.

Additionally, carbon and greenhouse gases are stored in sinks in wetlands instead of being released into the atmosphere. This natural purification definition is an example of the value of wetlands in our environments.

Changing Water Flows

The water regime is how rivers and wetlands change in response to rainfall and groundwater flow. It includes how much water is present, as well as its duration and location it is located. There are many ways that a water regime can be affected, particularly by humans. These include damming rivers, pumping water, and constructing farm dams or banks that change drainage patterns.

Impact of Wetland Loss

There are numerous threats to wetlands. Water extraction, climate change, invasive plants, uncontrolled fires, and poor agricultural practices all can cause the loss of wetland habitat. Without wetlands, our environments would look drastically different.

Wetlands and the vegetation in them prevent erosion. Without wetlands, there would be increased sediment in

bodies of water that would prevent light from reaching aquatic plants. Higher levels of sediment could also cause aquatic habitats to be unsuitable for aquatic animals.

Without wetlands, large amounts of nutrients would be released into streams and lakes instead of



Photo by
Lars Lachmann

filtered out. The excessive nutrients would cause plants and algae to grow at an increased rate, potentially creating algal blooms that block out light and use up all of the oxygen in an area of water. Salts would move closer to the surface and slow plant growth, and acids and metals may be released into the soil, and later water, if wetlands weren't around to filter it first.

Resilience to Natural Hazards

In addition to saving water for periods of drought and absorbing excess water in times of flooding, wetlands are able to offer environmental resilience to a number of other natural hazards. They can be a natural barrier to fires and help reduce frequency of fire events. Marshes along coastlines can also reduce wave height and wind speeds before they reach the shoreline, lessening overall storm damage.

Improving Wetland Management

It is important to continue conservation of wetlands. Rehabilitation and restoration of wetlands are excellent opportunities for improvement, as well as monitoring different environments to determine if a wetland's quality is improving or declining over time. There are other practices, such as catching nutrients and salts from agriculture before they reach water bodies, that would help water quality improve. The value of wetlands in our environments is not to be underestimated. ●

WILDLIFE BIOLOGY

Here's How Plants Became Meat Eaters

BY DIANE LINCOLN | Livescience.com | June 1, 2020

About 70 million years ago, when dinosaurs roamed the Earth, a genetic anomaly allowed some plants to turn into meat eaters. This was done in part, with a stealthy trick: repurposing genes meant for their roots and leaves and using them instead to catch prey, a new study finds.

This step is one of three that some non-carnivorous plants took over tens of millions of years to allow them to turn into hungry carnivores, the researchers said.

The meat-eating shift gave these plants a number of advantages. In effect, “carnivorous plants have turned the tables by capturing and consuming nutrient-rich animal prey, enabling them to thrive in nutrient-poor soil,” the researchers wrote in the study, published online May 14 in the journal *Current Biology*.

To investigate how carnivorous plants evolved, an international team of botanists and biologists led by Jörg Schultz, Associate Professor, at the University of Würzburg, Germany, compared the genomes and anatomy of three modern meat-eating plants

There are hundreds of carnivorous plant species, but the researchers chose to look at three related insect-eating plants, all members of the Droseraceae (sundew) family. All three of these plants use motion to capture prey, the researchers said.

One plant is the familiar Venus flytrap (*Dionaea muscipula*), a native to the wetlands of the Carolinas that has influenced Pokémon characters, made appearances in various Saturday morning cartoons, and even inspired a Broadway play. The closely related aquatic waterwheel plant (*Aldrovanda vesiculosa*) occupies the waters of almost every continent. It has spindly underwater flaps that quickly tighten around unsuspecting marine animals. The third plant investigated, the beautiful but deadly sundew plant (*Drosera spatulata*), is common in Australia. Luring victims with sweetness, the sundew rolls up a sticky strip around its catch.

After analyzing these plants, the team discovered the three-step process toward carnivory. First, about 70 million years ago, an early non-carnivorous ancestor of the three modern plant carnivores underwent a whole-genome duplication, generating a second copy of its entire DNA, or genome. This duplication freed up one of the copies of leaf and root genes to diversify, allowing them to serve other functions. Some leaf genes developed into genes for traps, while carnivorous nutrition and absorption processes were guided by genes that otherwise would have served roots seeking nutrition from soil.



The second step in their journey to carnivory occurred once the plants began receiving new nutrients from prey. At that point, traditional leaves and roots were no longer as necessary. Many genes that were not involved in carnivorous nutrition began to disappear. For instance, seedlings of aquatic waterwheel plants acquire an early proto-root, but it fails to develop as they mature. This is the only remnant of what once was a root system. As a result of losing this gene and others, the three plants observed in this study are the gene-poorest plants to be sequenced to date, the researchers stated.

Two earlier studies by other groups of scientists in 2013 showed similar gene-poor findings in other carnivorous plants. They found that an aquatic bladderwort thriving on all continents but Antarctica and a corkscrew ground-covering plant native to Brazil both had very small genomes compared with non-carnivorous plants. These carnivores may also have undergone the same gene-shedding process, the researchers of the new study said.

In the third step of the transformation to carnivory, the plants underwent evolutionary changes specific to their environment. The roots and leaves evolved to be trap-specific, the researchers found. Genes for roots that were once used to seek out and absorb nutrients from soil were now commandeered to create enzymes needed to digest and absorb nutrients from prey. Genes once used in glands that secreted nectar to attract pollinating insects were summoned to traps, where they produce substances to attract prey.

Most plants with leaves and roots contain the material necessary to become carnivorous. Researchers wrote that the three-step process revealed by the new study shows how, over time, ancient “non-carnivorous plants evolved into the most skillful green hunters on the planet.” ●

Carnivorous plants like Venus flytraps have evolved to be skillful hunters.

Image by Kuttelvaserova Stuchelova/Shutterstock

“I’m the product of 6 million years of evolution? Come on, man. I crawled out of a swamp yesterday.”

PETER STEELE // American singer and bassist for Type O Negative

MATHEMATICS

Sudoku

#155 PUZZLE NO. 2919551

	2						3	
	4	5		3		9		
						4	8	
						8		3
5	3			9				7
			1					
	1					6		
7				6		3		
		3	2		9		4	5

#156 PUZZLE NO. 6197252

6	9							8
							3	
	1			2			7	5
5		3	8		2	9		6
9	6		3			1		
	2							
	5	9	2					
			6			8		
							5	1

©Sudoku cool

SUDOKU HOW-TO GUIDE

- 1.** Each block, row, and column must contain the numbers 1-9.
- 2.** Sudoku is a game of logic and reasoning, so you should not need to guess.
- 3.** Don't repeat numbers within each block, row, or column.
- 4.** Use the process of elimination to figure out the correct placement of numbers in each box.
- 5.** The answers appear on the last page of this newsletter.

[illegible]

What the example will look like solved

2	4	8	3	9	5	7	1	6
5	7	1	6	2	8	3	4	9
9	3	6	7	4	1	5	8	2
6	8	2	5	3	9	1	7	4
3	5	9	1	7	4	6	2	8
7	1	4	8	6	2	9	5	3
8	6	3	4	1	7	2	9	5
1	9	5	2	8	6	4	3	7
4	2	7	9	5	3	8	6	1



“In Nature there is no dirt,
everything is in the right
condition; the swamp and the
worm, as well as the grass and
the bird — all is there for itself.”

BERTHOLD AUERBACH // German poet and author

DID YOU KNOW?

Swamps are actually the foundation that is **required for coal development**. Swamps from millions of years ago are responsible for the coal that we all use today for power, heat, and other electrical needs.

There is a grouping of swamps that exist in the Middle East which are called the **Fertile Crescent**. This is because these freshwater swamps are so filled with different types of animals and plant life that no other region can compare to it. Many scientists believe that the Fertile Crescent is one of the places where modern life was created.

The **type of tree** that grows in a swamp is actually how most swamps are named.

Coastal swamps tend to be what is called a "saltwater" swamp. Those that are further inland tend to be a freshwater swamp. Both, however, can be found along coasts or inland.

Nearly 50% of the total swampland in the U.S. was destroyed before protections were enacted in the 1970s to save this environment.



Speed Bump by Dave Coverly

Idiom

“Stick in the mud”

Meaning A narrow-minded or unprogressive person; one who lacks initiative

Origin The figurative phrase ‘stick in the mud’ derives from the imagery of someone whose feet are stuck in wet clay and is unable to progress. It was preceded in the language by earlier versions, for example ‘stick in the briers, clay, mire’ etc. These were usually applied to people who remained in a difficult situation, either by choice or because they were stuck. Thomas Cooper’s *Thesaurus*, 1565, included an example:

They beyng accused of extortion and pillage were in mucche trouble, or stacke in the bryars.

Only ‘stick in the mud’ has lasted. The first citations that I can find that include that are from the 18th century. The London newspaper *The General Evening Post* printed an example on 8th December 1733:

John Anderson, Francis Ogleby, and James Baker, alias Stick in the Mud, for breaking open the House of Mr. Thomas Bayner, a Silversmith, and stealing thence Plate to a great value.

It is clear from those extracts that ‘stick in the mud’ was used as a nickname and we can reasonably assume that it indicated a particular character trait of the person so named.

Source: phrases.org.uk



WHILE IT IS TRUE THAT THERE CAN BE SOME DANGEROUS ANIMALS IN A SWAMP, SUCH AS THE ALLIGATOR OR THE WATER MOCCASIN, SOMETIMES CALLED THE COTTON-MOUTH, **MOST SWAMPS ARE SAFE AND HIGHLY BENEFICIAL.**



WHAT MAKES SWAMPS SO UNIQUE IS THAT THE LAND WITHIN THE ECOSYSTEM IS SO DRENCHED WITH WATER ALL OF THE TIME THAT IT **ACTS LIKE A SPONGE.** THIS MEANS IT CAN ABSORB A LOT OF WATER WHICH REGULAR LAND IS UNABLE TO ABSORB, THEREBY CONTROLLING THE FLOODING WHEN IT OCCURS IN THE REGION.

Source: <https://apecsec.org/12-interesting-facts-about-swamps/>

ART + CULTURE

In the Congaree

BY SAMUEL AMADON

I'm home. I'm not home. I'm on the road or
Off it, briefly. I've been out of place. I've been

Taking familiar walks. I like the boardwalk. I like
The swamp. I feel ill at ease. I feel fine.

As August ends, I'm thick and cold. As I circle
Above a tide of cypress knees, of webs,

Fallen trunks and leaves, I gather out
The mud a mossy repose. A violent mist.

A green allure. I have spoken into
A dead and standing pool of air, where,

In its center, a spider hangs. I can hear myself
Moving, notes taken on paper, on

My feet, I stop and that makes a sound.
I look out into what feels ancient. It

Doesn't seem old. My voice is spun.
I'm rolling out myself last rung by rung.

I pinned my eye to the base of a loblolly pine,
And rose, much higher than I would

Suppose. I know everything already. I have to
Ask people questions. All of my relatives

Are famous. There are so many people dead.
Look at these trees. They're shattered in pieces.

They're tall and full. I look forward, steadily,
At the moss grown high as the flood.

Samuel Amadon is the author of *Often, Common, Some, And Free* (Omnidawn forthcoming), *Listener* (Solid Objects 2020), *The Hartford Book* (Cleveland State 2012), winner of the *Believer* Poetry Book Award, and *Like a Sea* (Iowa 2010), winner of the Iowa Poetry Prize. His poems have appeared in *The New Yorker*, *The Nation*, *Poetry*, *American Poetry Review*, *Kenyon Review*, *Ploughshares*, *Lana Turner*, and elsewhere. He is the author of four chapbooks, including *Each H* from Ugly Duckling Presse. He regularly reviews poetry in places such as *The Believer*, *Boston Review*, *Lana Turner: a journal of poetry and opinion*, and *Rain Taxi*. He edits the poetry journal *Oversound* with Liz Countryman, and directs the MFA Program at the University of South Carolina.

WRITING PROMPT

Few settings are as evocative as swamps. From the sound of frogs croaking and water burbling to the feel of the hot, sticky air, or to the sight of moss dripping off of the branches into the murky water, swamps are filled with a ripe number of descriptors. For this week, think of a setting that can be vividly described with your five senses of sight, touch, taste, smell, and hearing, and use this setting as inspiration for a poem, short story, or creative essay.

Word Search

T	G	M	A	Y	F	R	E	S	O	M	G	E	U
H	O	U	E	E	I	A	E	U	M	T	M	U	H
I	I	D	L	C	L	I	R	K	G	R	O	T	N
C	O	A	R	A	K	L	M	L	N	G	S	R	M
K	C	N	E	L	U	I	I	U	U	A	S	U	R
E	C	C	D	P	O	M	S	M	R	L	Y	N	O
S	Y	I	I	E	E	A	T	D	W	R	E	K	A
S	P	E	P	M	G	F	N	O	P	A	O	S	D
A	R	N	S	L	M	R	E	R	O	U	A	M	P
E	E	T	D	I	E	A	E	E	O	G	T	S	M
P	S	C	T	O	L	A	W	E	L	U	C	A	A
I	S	R	T	E	O	E	V	I	N	S	E	G	W
N	O	K	N	E	B	L	I	E	P	T	G	H	S
E	U	S	S	S	I	K	F	U	S	P	A	C	D

POOL
MUD
RUNG
GREEN

SWAMP
ANCIENT
LEAVES
PINE

THICK
FAMILIAR
SPIDER
MOSSY

FLOOD
MIST
ROAD
TRUNKS

AUGUST
CYPRESS
WEBS
PLACE

PROFILE

She Helped Americans Fall in Love with Florida's Everglades

Conservation Hall of Fame® Inductee Marjory Stoneman Douglas

BY MICHAEL LIPSKE | The National Wildlife Federation | April 1, 2000

The National Wildlife Federation Conservation Hall of Fame was established in 1963 to honor Americans who have made major contributions to the nation's environmental and natural-resource protection efforts. In March, NWF added two new inductees to the list of 23 other people whose legacies were previously honored: Marjory Stoneman Douglas and Morris King Udall.

Marjory Stoneman Douglas was never anybody's saccharine little old lady in tennis shoes. Five feet of feistiness topped off by a floppy hat, the influential writer and activist once acknowledged: "They call me a nice old woman, but I'm not."

For Douglas, all was fair in her fight to save every ounce and inch of the Everglades — a subtropical wilderness of water, wildlife and sawgrass covering millions of acres of South Florida. At contentious public meetings on the fate of the Glades, she was not above playing up her deafness when urged to yield the floor. She also knew how to scold the opposition into silence: "I knew your father and he would be so ashamed of you," she once told a representative of the Army Corps of Engineers.

In the second act of a life that ran 108 years (born in 1890, Douglas died May 14, 1998), the Floridian helped Americans fall in love with a place that many people had long dismissed as worthless swampland. She struck her first blow for preservation in 1947, with publication of her lyrical, best-selling book *The Everglades: River of Grass*, which fanned public opinion in favor of Everglades conservation. Decades later, when Douglas was pushing 80, she struck again, founding the conservation group Friends of the Everglades in order to fight the building of a jetport in the wetlands.

Douglas usually preferred to defend the swamp and its creatures from the comfort of the Coconut Grove cottage she lived in since 1926. Born in Minneapolis, she moved in 1915 to Florida, where she went to work for a newspaper (now *The Miami Herald*) founded by her father. A suffragist and later a relief worker with the American Red Cross in Europe during World War I, Douglas also became a prize-winning short-story writer for magazines.

In the early 1940s, she began research for *The Everglades: River of Grass*. The nonfiction book celebrated the region's "vast glittering expanses, wider than

the enormous visible round of the horizon," where sunlight poured down on prairies of sawgrass and on the shallow water that inched southward from Lake Okeechobee toward the Gulf of Mexico. Douglas wrote about roseate spoonbills, panthers, and other Everglades wildlife. However, she also reminded readers that continuing the relentless development around the vast wetland imperiled the ecosystem.

Although the Everglades was declared a national park in 1947 (it was the first park created to protect a threatened ecological system), assaults against it have continued. The Army Corps of Engineers long ago embarked on a campaign that diverted Lake Okeechobee's life-sustaining waters from the park. Chemical-laden runoff from agriculture and other sources pollutes the wetlands and poisons its plants and animals. South Florida's rapidly growing human population craves the same water that is needed by park wildlife. Despite the many millions of dollars that Florida and the federal government have committed to restoring the Everglades, the fate of the wilderness is anything but certain.

"There are no other Everglades in the world," Douglas wrote at the beginning of her book. Keen awareness of the value of this "magnificent, subtle and unique region" kept her fighting for its protection against all comers. "I know I've got my enemies," she once said, "and I feel fine about it, thank you." She knew that the fight to save the Glades would never really end, and yet relished the combat.

"Boo louder," she told an audience of farmers and developers who were jeering the octogenarian as she walked to the dais at yet another meeting several years ago. She laughed. They booed. Then Marjory Stoneman Douglas spoke her mind. ●



Marjory Stoneman Douglas, Everglades activist and conservationist

Image from nps.gov

CULTURE

Justice for the Swamp | Why We Hate Some Ecosystems and Not Others

It's not just the rainforests that need saving.

BY MELISSA CRONIN | Vice.com | April 6, 2018

The past year has delivered the phrase “drain the swamp” abruptly into the public lexicon, taking its rightful place inside President Donald Trump’s speech. But the word ‘swamp’ is no stranger to public controversy — it’s been our most hated ecosystem for centuries.

The soon-to-be president-elect tweeted: “I will Make Our Government Honest Again — believe me. But first, I’m going to have to #DrainTheSwamp.” From there, the phrase took off. There were memes, hastily scrawled campaign signs, endless rally chants, even a hardcover book written by Congressman.

The message was clear: corruption in D.C. was the swamp, and the swamp should be removed. Everyone understood the slogan without any explanation, because the swamp, in the English language at least, is a bad place, a dirty and messy place that should be abolished.

But as “Drain the Swamp” swept through American politics, scientists were quick to point out that the use of “swamp” as a derogatory term was wildly ecologically inaccurate — Wetland Ecology Twitter even flooded the hashtag #ReigntheSwamp with the weird and amazing creatures that live in swamps. As it turns out, actual, non-political swamps, technically defined as forested wetlands that are dominated by woody trees, are incredibly valuable ecosystems, ones that provide services like water purification, protection from coastal flooding, groundwater recharge, and habitat for innumerable native species of plants and animals like beavers, frogs, crocodiles, and snakes.

The world’s swamps and wetlands are also economically valuable, worth some \$70 billion annually, according to a report by the World Wildlife Fund. This value comes from functions like erosion control, groundwater recharge, waste storage, tourism and recreation, and the boggy soil of swamps literally soaking up carbon dioxide from the atmosphere.

So with all of this value — aesthetically, monetarily, and as an excellent venue for a lazy river float — why do we continue to think of swamps as nasty, malevolent places where only “swamp monsters” and “skunk apes” hang out? (In case you’re unfamiliar, skunk apes are cryptids — a type of red-eyed, foul-smelling Florida bigfoot that are fascinating).

The popularity hierarchy of ecosystems should come as no surprise to anyone who’s ever watched a nature documentary like “Planet Earth” — rainforests, the charismatic darlings of biodiversity, get far more screen time than their less alluring peers like, say, mudflats or swamps. There’s data to support this — just like conservation funding often gets funneled to protect more larger, more cuddly species like pandas and elephants, “ugly” ecosystems also get shafted in comparison with more charismatic megabiomes when it comes to conservation. A 2006 review of two decades of conservation science found that ecosystem bias is real: marine, tundra, and desert biomes were least likely to be studied by scientists, while there was no shortage of research occurring in North American and European forests. The report found that aquatic systems were far underrepresented in their conservation attention in relation to their size, and swamps, of course, didn’t even make the list.

There are, I’ll admit, reasons why humans might be evolutionarily programmed to be averse to swamps, like the human predisposition to fear snakes and spiders. Mosquitoes, historically powerful disease vectors, lay their eggs in swamps’ stagnant waters. And the murky waters of wetlands prevent people from spotting dangerous predators like alligators before they strike. Wetland water isn’t usually drinkable, and hunting and navigation aren’t easy



WORD PLAY A Rebus puzzle is a picture representation of a common word or phrase. How the letters/images appear within each box will give you clues to the answer! For example, if you saw the letters “LOOK ULEAP,” you could guess that the phrase is “Look before you leap.” *Answers are on the last page!*

in small channels. Even the humid conditions in many swamps present a problem for human microbiome, which harbors more pesky microorganisms in moist conditions than in dry ones. Not to mention the quicksand! Still, as far as I can tell, there's no evidence for swamp-hate as an evolutionary phenomenon. In fact, nowadays the greatest danger posed by a swamp to people living in developed countries is more likely the risk of building collapse on filled-in wetlands — or, the threat of more severe storms and flooding that come along with wetland loss.

In fact, draining and filling in swamps has been an American tradition for centuries, from the Florida Everglades, which has lost about half of its total area over the last few decades, to the Gulf of Mexico and beyond. The latest national report by the U.S. Fish & Wildlife Service estimated coastal wetland loss at 80,000 acres every year — an amount just shy the area of the Philadelphia. Draining wetlands has been marked as a serious conservation problem and has even led to saltwater creeping in to wells that were once meant for drinking, loss of fertile agricultural land, and even fires on newly barren peatland.

Even so, swamp-hate is, like panda-hugging, a cultural construct that is as much a product of exposure as it is of the physical conditions of the swamp. A short list of cultural artifacts in which swamps play a starring role include: the plant-human hybrid monster in “Swamp Thing,” the swamp creature in Stephen King’s “It,” almost all of the villains featured in the cartoon “Scooby Doo, Where Are You!”, and a string of TV shows with names like “Swamp Monsters” and “River Monsters.” In the same way that “Shark Week” paints sharks into vicious, bloodthirsty killers, the swamp media machine is pushing us to fear swamps, without even considering their ecological and economic value.

And so, what are we to do with this culture of swamp rancor? Well, a rebranding campaign, similar to that which has been taken on by shark conservationists in recent years, could be a good start. But for now, we can all do our part to encourage swamp stewardship by speaking fondly of swamps, rather than using them as an easy analogy for a hellish pit of political corruption. And definitely never, ever talk about draining them. ●

🔊 Edited for space

“When I would recreate myself, I seek the darkest wood, the thickest and most impenetrable and to the citizen, most dismal, swamp. I enter a swamp as a sacred place, a sanctum sanctorum ... I seemed to have reached a new world, so wild a place ... far away from human society.”

HENRY DAVID THOREAU // American philosopher and writer



RANDOM-NEST

Classification of Wetlands

BY THE U.S. FISH AND WILDLIFE SERVICE | EPA.GOV | ACCESSED SEPTEMBER 27, 2021

Marshes | Marshes are defined as wetlands frequently or continually filled with water, characterized by soft-stemmed vegetation adapted to watery conditions. There are many different kinds of marshes, ranging from the prairie potholes to the Everglades, coastal to inland, freshwater to saltwater. All types receive most of their water from surface water, and many marshes are also fed by groundwater. Nutrients are plentiful and the pH is usually neutral leading to an abundance of plant and animal life.

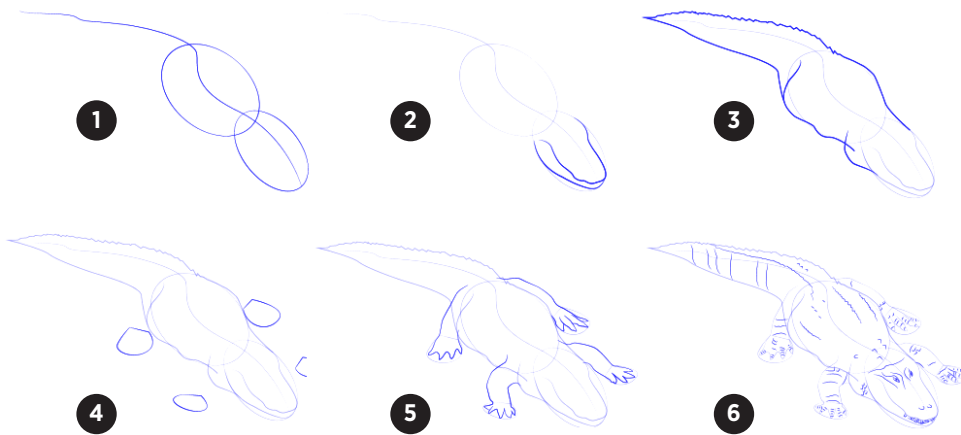
Swamps | A swamp is any wetland dominated by woody plants. There are many different kinds of swamps, ranging from the forested Red Maple, swamps of the Northeast to the extensive bottomland hardwood forests found along the sluggish rivers of the Southeast. Swamps are characterized by saturated soils during the growing season and standing water during certain times of the year. The highly organic soils of swamps form a thick, black, nutrient-rich environment for the growth of water-tolerant trees such as Cypress, Atlantic White Cedar, and Tupelo. Plants, birds, fish, and invertebrates such as freshwater shrimp, crayfish, and clams require the habitats provided by swamps. Many rare species, such as the endangered American Crocodile, depend on these ecosystems as well.

Bogs | Bogs are characterized by spongy peat deposits, acidic waters, and a floor covered by a thick carpet of sphagnum moss. Bogs receive all or most of their water from precipitation rather than from runoff, groundwater or streams. As a result, bogs are low in the nutrients needed for plant growth, a condition that is enhanced by acid forming peat mosses. Two primary ways that a bog can form: 1. sphagnum moss grows over a lake or pond and slowly fills it (terrestrialization), or 2. sphagnum moss blankets dry land and prevents water from leaving the surface (paludification). Over time, many feet of acidic peat deposits build up in bogs of either origin.

Fens | Fens, are peat-forming wetlands that receive nutrients from sources other than precipitation: usually from upslope sources through drainage from surrounding mineral soils and from groundwater movement. Fens differ from bogs because they are less acidic and have higher nutrient levels. Therefore, they are able to support a much more diverse plant and animal community. These systems are often covered by grasses, sedges, rushes and wildflowers. Some fens are characterized by parallel ridges of vegetation separated by less productive hollows. The ridges of these patterned fens form perpendicular to the downslope direction of water movement. Over time, peat may build up and separate the fen from its groundwater supply. When this happens, the fen receives fewer nutrients and may become a bog.

Edited for space and clarity

HOW TO DRAW AN ALLIGATOR



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 WORDS OF ENCOURAGEMENT

Writer Ocean Vuong had no idea that becoming a writer was ever a possibility for him. Not as he fled Vietnam at two-years old to a refugee camp, or as he struggled to learn to read and write for the first time at eleven-years-old or even as he entered his first year of business school at twenty-years-old. Vuong could never imagine his place in an artistic community. However, now at 32, he is currently the author of two books and was awarded the MacArthur "Genius" Grant for his outstanding literary work. He published an article in 2014 about how his artistic outlet has helped him to overcome and connect more with the struggles he has faced in his life.

In it he states, "All art, if willing, can create the space for our most necessary communications. The character in the novel, the brush strokes in the painting, its tactile urgency, the statue of the Madonna made from birdseed, partly devoured and narrowed into a yellowed sliver in the rain. I want to believe there are things we can say without language."

In his quote and in his story, we are reminded not only of the power that art holds in the world, but also its power to change and evolve ourselves. That art can be crafted in any medium of our choosing, and it is always available as an outlet for our experiences, for our stories. *The Warbler* team hopes that in this edition you have found something that motivates you in your own artistic and educational journey. Stay inspired and always keep creating.

Julia



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Answers

SUDOKU #155

1	2	7	9	8	4	5	3	6
8	4	5	6	3	1	9	7	2
3	9	6	7	2	5	4	8	1
2	7	1	5	4	6	8	9	3
5	3	4	8	9	2	1	6	7
9	6	8	1	7	3	2	5	4
4	1	9	3	5	7	6	2	8
7	5	2	4	6	8	3	1	9
6	8	3	2	1	9	7	4	5

SUDOKU #156

6	9	2	5	3	7	4	1	8
7	8	5	1	6	4	2	3	9
3	1	4	9	2	8	6	7	5
5	7	3	8	1	2	9	4	6
9	6	8	3	4	5	1	2	7
4	2	1	7	9	6	5	8	3
8	5	9	2	7	1	3	6	4
1	4	7	6	5	3	8	9	2
2	3	6	4	8	9	7	5	1



Rebus Puzzle

Page 8

1. Uncle Sam wants you
2. Button up your overcoat
3. Chip off the old block

Send ideas and comments to:

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UNTIL NEXT TIME !